Attorney General Martha Coakley New England Ratepayer Advocate Summit September 17, 2008

Presentation by Jed M. Nosal,
Chief
Office of Ratepayer Advocacy

Overview

- Roles and the Regional Planning Process
- Electricity Prices
- Natural Gas and Impact on Electricity
- Potential of Demand Response and Energy Efficiency
- Transmission System Planning
- Renewable Portfolio Standards
- Carbon Reduction Programs

Role of the Ratepayer Advocate

- Represent ratepayer interest before state and federal regulators and through the court system
- Advocate before state and federal policy makers and legislators
- Priorities:
 - Safe and Reliable Service
 - Just and Reasonable Rates
 - Energy policy that puts the interests of customers first, minimizing rate impacts and ensuring long-term, tangible benefits
 - Preserve consumer protection in deregulated markets

New England Ratepayer Advocates

- Each New England State is organized differently
 - CT: Office of Consumer Counsel, Mary Healey
 - MA: Attorney General Martha Coakley, Office of Ratepayer Advocacy
 - ME: Office of the Public Advocate, Richard Davies
 - NH: Office of the Consumer Advocate, Meredith A. Hatfield
 - VT: Division of Public Advocacy, Sarah Hoffman
 - RI: Attorney General Patrick Lynch
- National Association of State Utility Consumer Advocates

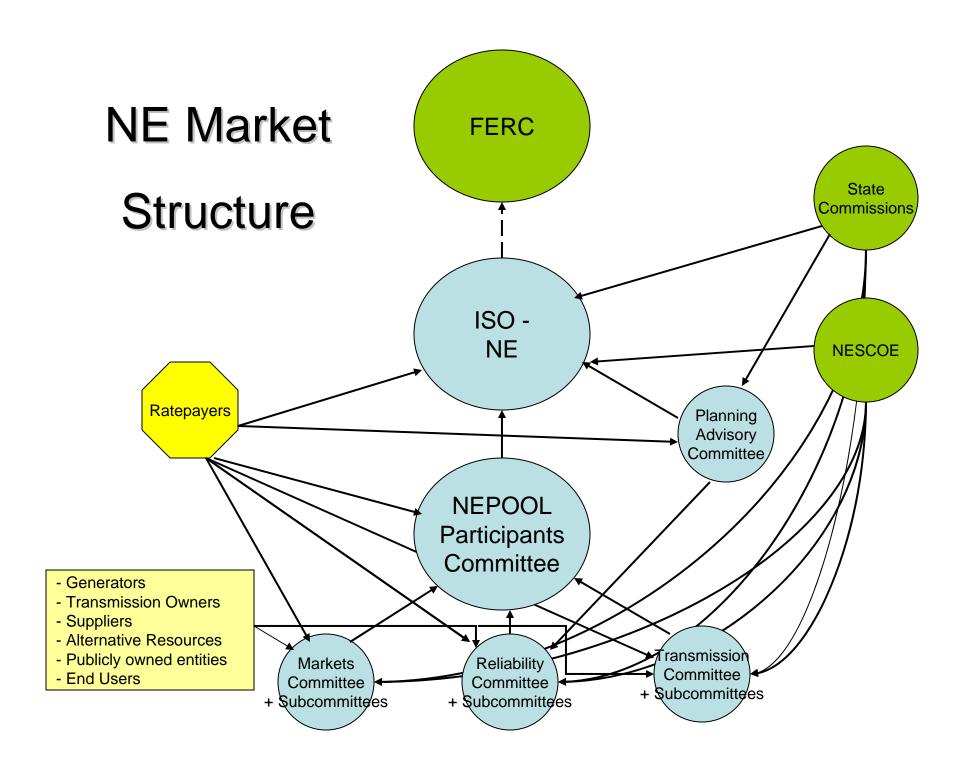
The Regional Decision Making Process - ISO New England

- ISO NE Regional Transmission Organization (RTO)
 - Operates Bulk Electric Power System.
 - Oversees Wholesale Energy Markets.
 - Oversees Transmission and Market Planning Processes.
- ISO NE is a Public Utility
 - FERC tariff governs ISO New England's operation of the bulk power system and wholesale markets.
 - Mandatory Reliability Standards.
 - Rates and terms must be "just and reasonable" and nondiscriminatory.
 - Stakeholder processes provide input, but tariff filing is ultimately ISO New England's decision.

The Regional Decision Making Process – NEPOOL Key Committees

- Participants Committee
 - Budget and Finance (advise PC on budgets, billing and settlement, and financial assurance policy)
 - FTR & LTTR Credit Policy Working Group (advise B&F on financial assurance policies for firm transmission rights)
- Markets Committee
 - Demand Resources Working Group
- Reliability Committee
 - Power Supply Planning Committee (reviews Installed Capacity Requirements and modeling assumptions)
- Transmission Committee
- Other subcommittees, working groups and task forces organized as delegated.

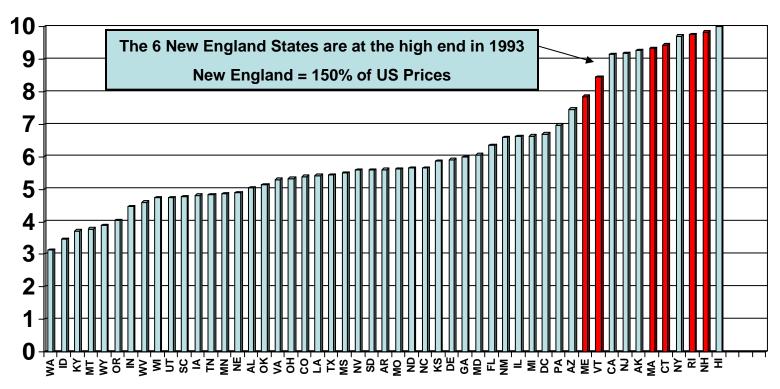
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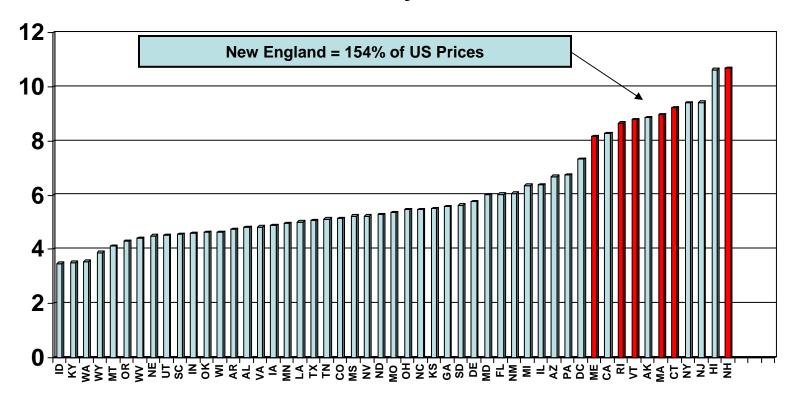
The Regional Decision Making Process - When to Show Up

- As early in the process as possible!
 - Sometimes key issues are worked out in subcommittees.
 - Not all changes are fully vetted at the Participants Committee.
 - The proponent of a change has the advantage of being prepared.
 - Solution: Early Input.

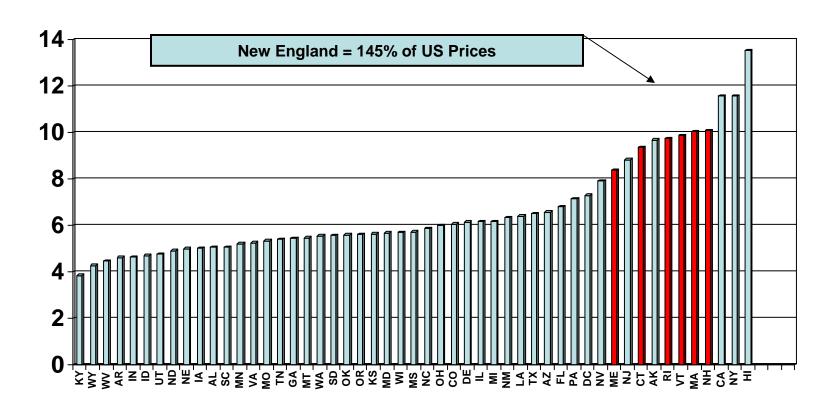
C&I Prices by State - 1993



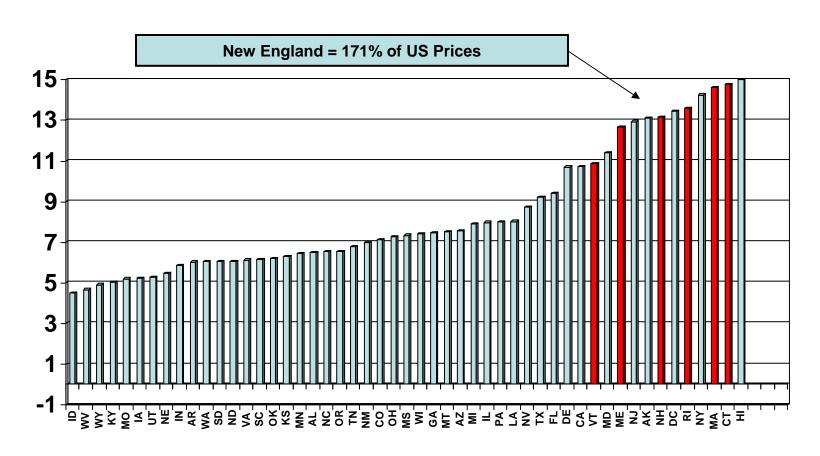
C&I Prices by State -1998



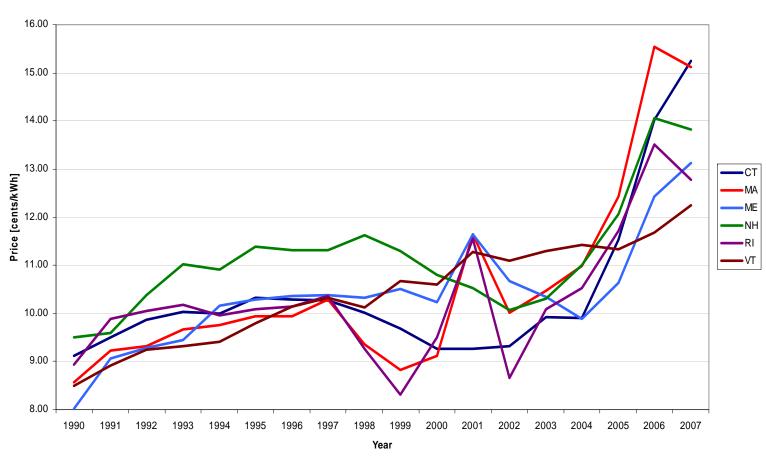
C&I Prices by State - 2003



Backdrop to Energy Issues in New England: High Prices C&I Prices by State - 2008



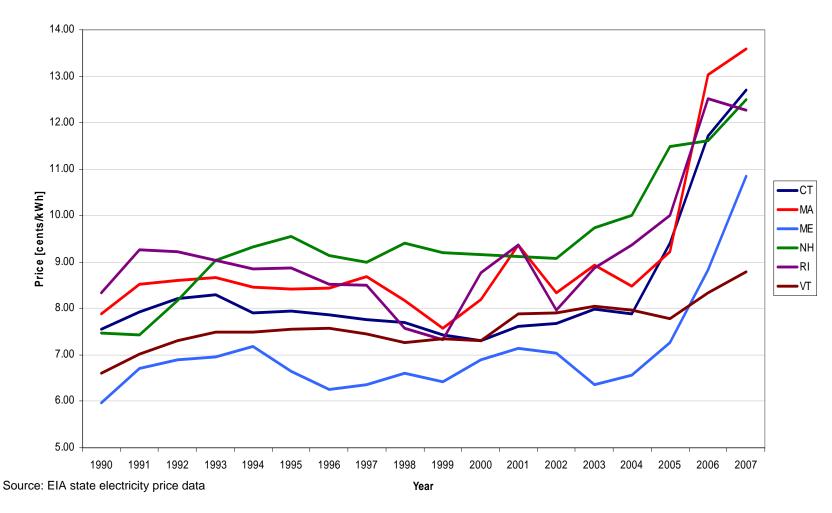
Commercial Electricity Prices of New England States



Source: EIA state electricity price data

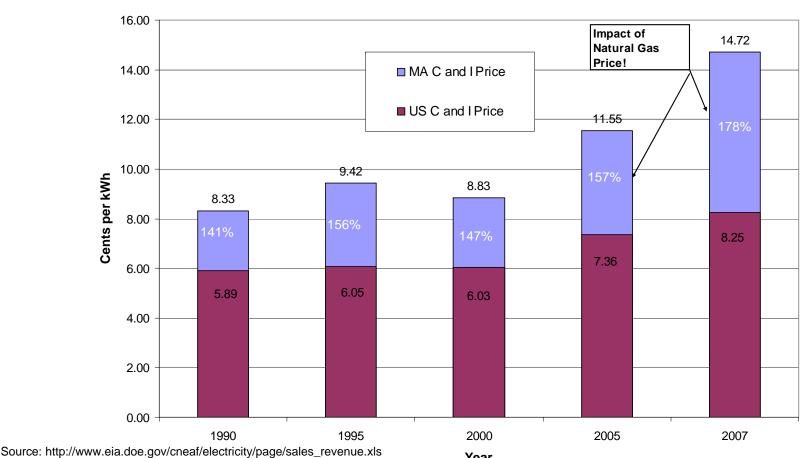
Prepared by Synapse Energy Economics, Inc.

Industrial Electricity Prices of New England States



Prepared by Synapse Energy Economics, Inc.

C&I Price MA vs US 1990 - 2007

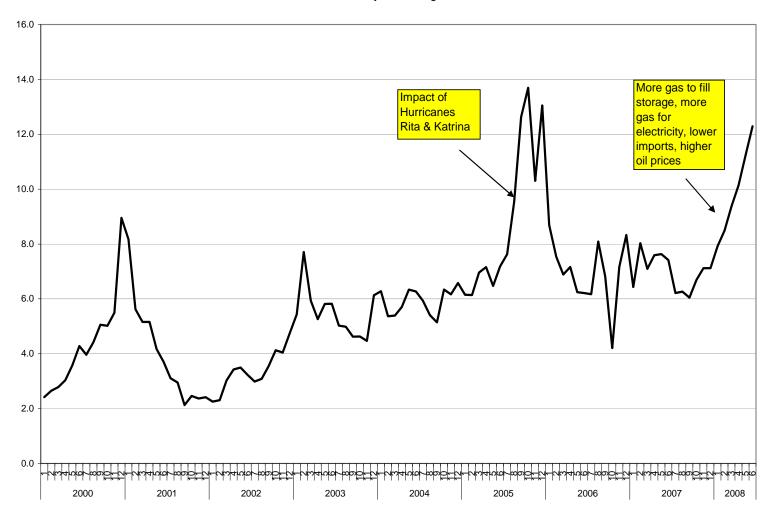


Notes: The chart is a blend of C&I taken by summing C&I Revenues, C&I electric kWh sales, and dividing the two sums (x100) to get a blended cents per kWh.



Backdrop to Energy Issues in New England: Natural Gas

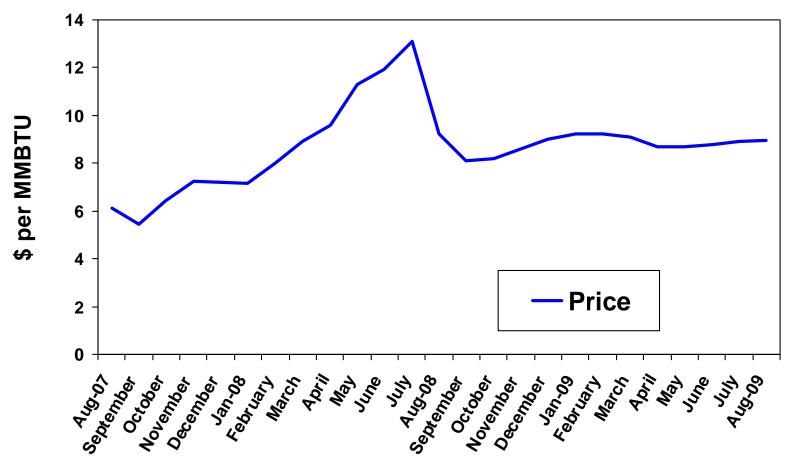
Monthly Henry Hub Prices (\$/MMBtu) Actual January 200 through June 2008



Prepared by Synapse Energy Economics, Inc.

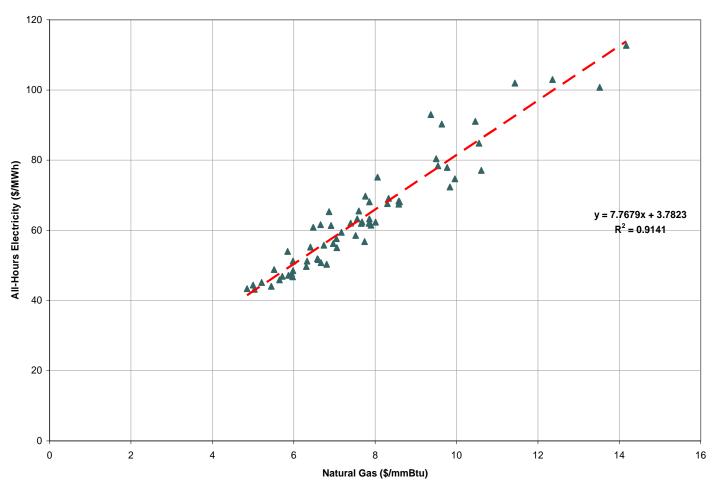
Backdrop to Energy Issues in New England: Natural Gas

Henry Hub Gas Prices



Backdrop to Energy Issues in New England: Natural Gas

Correlation between Wholesale Electricity and Natural Gas Prices in New England



Prepared by Synapse Energy Economics, Inc.

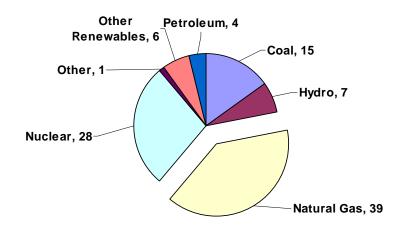
Price Trends for Natural Gas

- Short-term volatility
- Long-term steady increase
- High prices likely in effect over the next 2 years
- \$1/MMBTU change in gas price:
 - \$0.77/kWh change in wholesale electricity price
 - \$0.85/kWh change in retail electricity price

1990 Generation by Source

Other Renewables, 7 Other, 0 Nuclear, 33

2006 Generation by Source



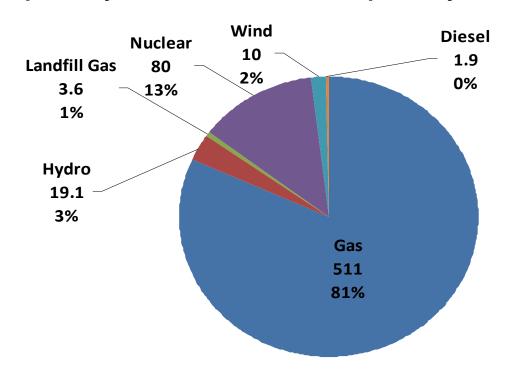
Source: EIA Generation by State

Forward Capacity Auction 2010 – 2011 Results

New

| Generation | 626 |
|--------------------------------|--------------|
| • DSM | <u>1,187</u> |
| Total New | 1,187 |
| Existing | |
| Generation | 30,239 |
| • DSM | 1,365 |
| • Imports | <u>933</u> |
| Total Existing | 32,537 |

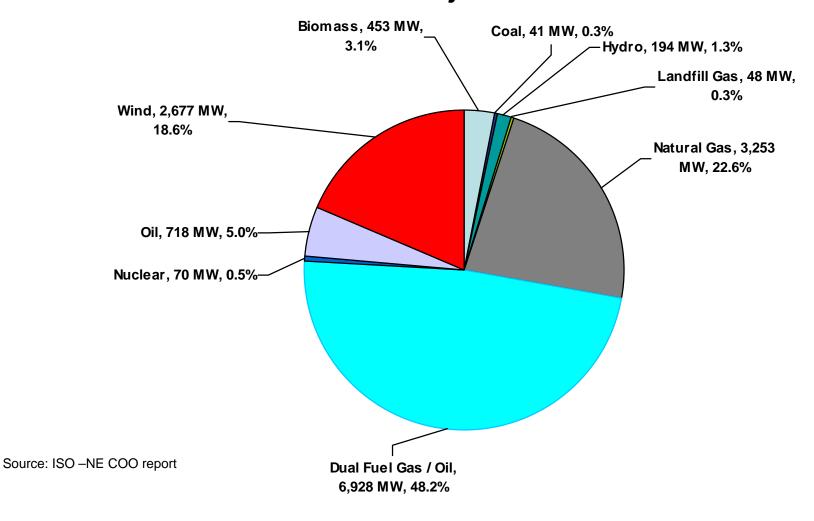
Capacity in Forward Capacity Auction #1



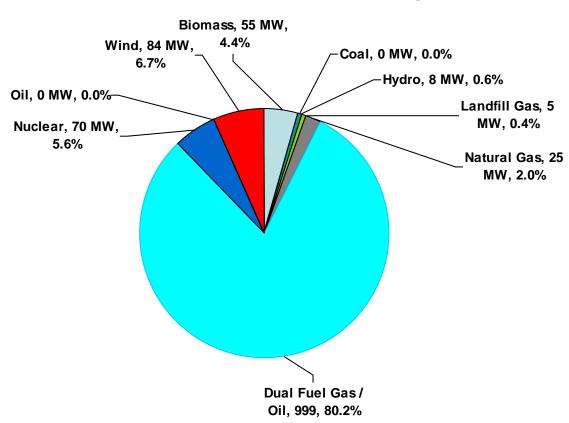
Notes: Total: 626 MW

Values represent MW and percent.

New Generation Projection Entire Queue



New Generation Projects - High Probability



Source: ISO -NE COO report

The Role of Demand Response and Energy Efficiency

- State policies are driving these options
- Customer tools to control/reduce/shift consumption in a high priced environment
- Environmental benefits carbon reduction
- Wholesale price mitigation will require a massive, region-wide effort to significantly impact price
 - ISO-NE Scenario Analysis
 - CT OCC and NH OCA Companion Report and further analysis

Table 1
Resource Assumptions: Additions and Retirements

| | EE/DR Common Assumptions | EE/DR with Retirements | Scenario Synapse M | Scenario Synapse P | | | | | |
|------------------------------------|--------------------------------|---------------------------|-----------------------|-----------------------|--|--|--|--|--|
| RESOURCE ADDITIONS | Capacity Values in MW | | | | | | | | |
| EE | 2,700 | 4,450 | 5,400 | 6,800 | | | | | |
| DR | 2,700 | 4,450 | 4,450 | 4,450 | | | | | |
| Onshore wind | 0 | 0 | 0 | 675 | | | | | |
| Offshore wind | 0 | 0 | 0 | 675 | | | | | |
| Landfill gas | 0 | 0 | 0 | 675 | | | | | |
| CHP | 0 | 0 | 0 | 800 | | | | | |
| Biomass | 0 | 0 | 0 | 675 | | | | | |
| Small hydro | 0 | 0 | 0 | 675 | | | | | |
| PV | 0 | 0 | 0 | 675 | | | | | |
| Fuel cells | 0 | 0 | 0 | 500 | | | | | |
| Total Additions | 5,400 | 8,900 | 9,850 | 16,600 | | | | | |
| RETIREMENTS | | | | | | | | | |
| Base retirements | 0 | -3,500 | -3,500 | -3,500 | | | | | |
| Additional retirements | 0 | 0 | -690 | -7,154 | | | | | |
| Forego construction of new IGCC | 0 | 0 | -310 | -310 | | | | | |
| Total retirements | 0 | -3,500 | -4,500 | -10,964 | | | | | |
| Net Additions | 5,400 | 5,400 | 5,350* | 5,636** | | | | | |

^{*} This does not match 5,400 MW exactly due to retiring discrete unit sizes.

^{**} Scenario P has a large amount of nondispatchable wind and photovoltaic energy plus large amounts of energy efficiency. Therefore, an extra 236 MW of capacity was added to avoid energy shortages.

Table 2
Annual Economic Metrics (2006 \$)

| Scenario | Energy (GWh) | LSE Expense (million \$) | Prod Cost (million \$) | Average Clearing Price (\$/MWH) | |
|-------------------------|-----------------|--------------------------------|---------------------------|--|--|
| EE/DR | 173,778 | 12,235 | 6,298 | 70 | |
| EE/DR w/ Retirements | 173,778 | 12,321 | 5,693 | 71 | |
| Synapse M | 173,778 | 12,331 | 5,410 | 71 | |
| Synapse P | 173,778 | 9,127 | 3,493 | 53 | |

Table 3
Annual Emissions Metrics

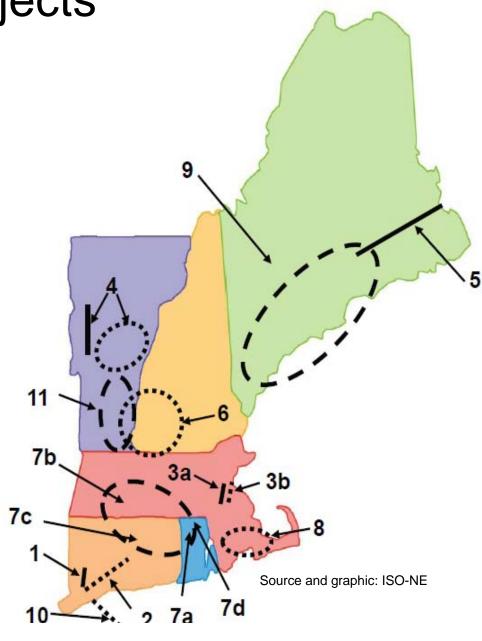
| Saanaria/Caaa | | Kto | Million tons | | |
|----------------------|----|---------------------------------|--------------|-----------------|--|
| Scenario/Case | ID | SO ₂ NO _X | | CO ₂ | |
| EE/DR | 2 | 72 | 34 | 67 | |
| EE/DR w/ Retirements | 8 | 45 | 24 | 56 | |
| Synapse M | 9 | 20 | 19 | 48 | |
| Synapse P | 10 | 10 | 17 | 33 | |

System Planning: Regional Reliability Projects

- Southwest Connecticut Phase I
- 2. Southwest Connecticut Phase II
- 3. NSTAR 345 kV Project
 - a. Phase I
 - b. Phase II
- 4. Northwest Vermont
- Northeast Reliability Interconnect
- 6. Monadnock Area
- 7. New England East-West Solution
 - a. Greater Rhode Island
 - b. Springfield 115 kV Reinforcements
 - c. Central Connecticut
 - d. Interstate
- 8. Southeast Massachusetts
- 9. Maine Power Reliability Program
- 10. 1385 Replacement
- 11. Vermont Southern Loop

In service
Under construction

Under study



System Planning: Regional Reliability Projects

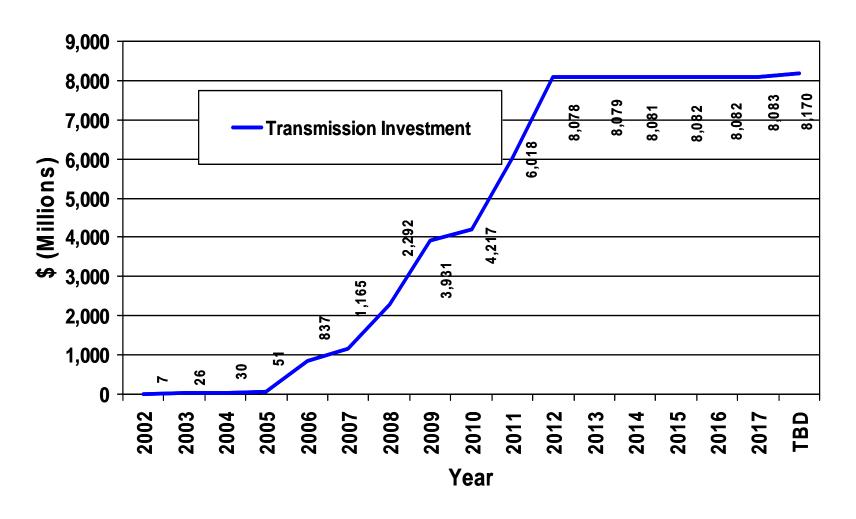
Transmission Reliability Projects (\$ Millions)

| Northwest VT Reliability Project | \$261.8 |
|--|------------------|
| Southwest CT Reliability Project | \$1,397.9 |
| NSTAR 345 kV Transmission Reliability Project | 283.1 |
| New England East-West Solution (NEEWS) | \$1,600.7 |
| Greater RI Transmission Reinforcements | \$182.0 |
| Merrimack Valley / North Shore Reliability Project | \$152.0 |
| Vermont Southern Loop Project | \$274.0 |
| Maine Power Reliability Program | \$1,424.0 |
| Other Projects | <u>\$2,526.0</u> |
| Total as of July 2008 | \$8,170.0 |

Source: ISO-NE

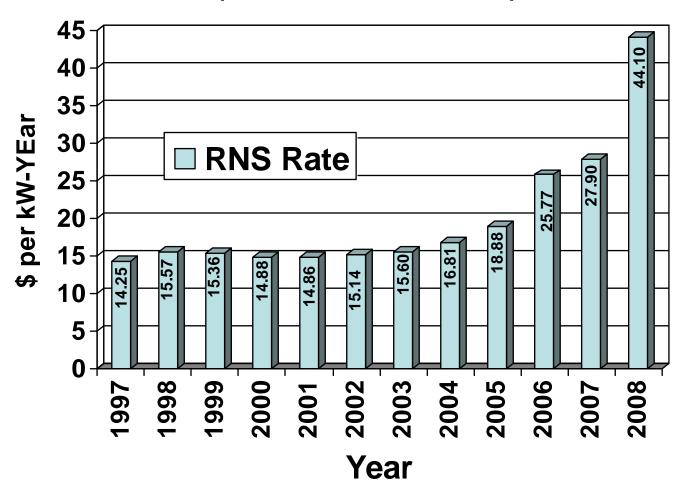
Transmission Reliability Investment

2002 - 2017



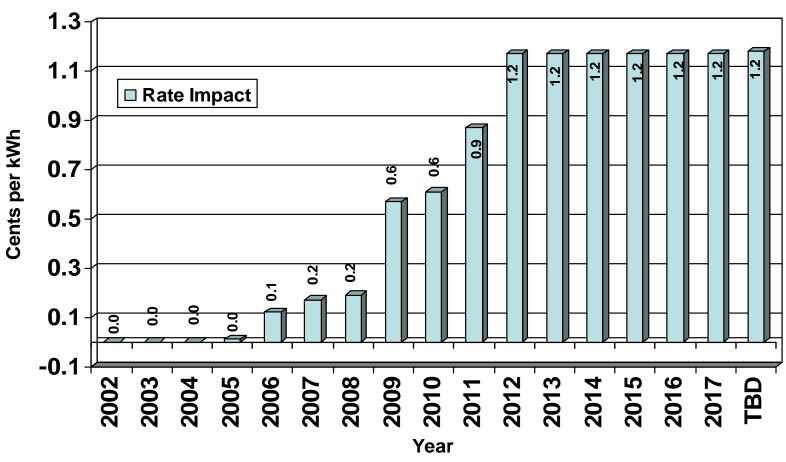
Source: ISO-NE

Historical RNS Transmission Rates (\$ / kW-Year)



Transmission Rate Impact

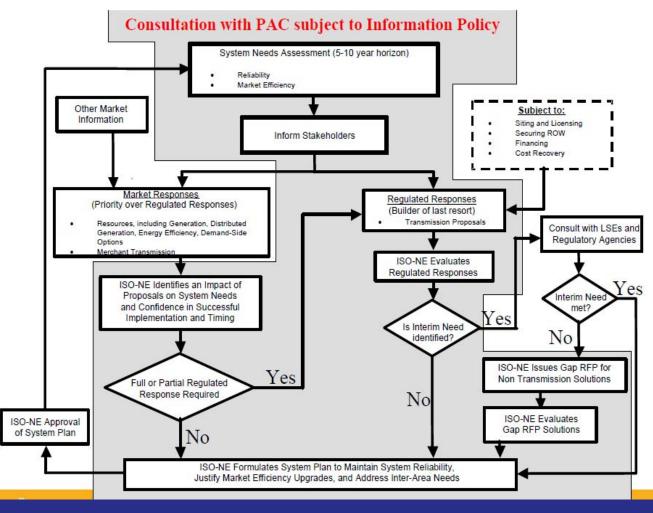
Approximate 2002- 2017



Notes: This slide is an estimate of what the likely rate impact will be for customers. This represents the transmission investment, multiplied by an 18% carrying charge, and divided the result by all New England kWh sold. This is an approximation and does not take into account depreciation of existing transmission assets or other factors.

ISO-NE Regional System Planning Process

Regional System Planning Process Flow



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System Planning: Requested Market Efficiency Transmission Studies

| Cost (\$ Million) |
|--------------------|
| \$625* |
| |
| \$1,800 |
| \$2,000 (660 MW) |
| \$2,300 (1,100 MW) |
| ? |
| \$2,500 |
| \$1,085 |
| |
| ? |
| |

State RPS polices

- All six New England states have adopted "renewable portfolio standard" (RPS) policies
- RPS policies require that consumer purchased electricity include a percentage of renewable resources
- Percentages vary from state to state
- Resources that qualify as "renewable" vary from state to state
- Some states have different classes of renewable resources
- Some/most/all states require increasing percentages of renewables year to year

New England State RPS Policies

| | | CT RPS Classes | | MA Classes ^(a) | ME Classes | | RI VT | | NH Classes | | | | |
|---|--|--|--|--|--|--|---|---|---|---|--------------------------------------|---|---------------|
| Year | I | II | III | I and II | I | II | Existing | New | | I | II | III | IV |
| 2008 | 5.0% | | 2.0% | 3.5% | 1.0% | | 2.0% | 1.5% | | 0.0% | 0.0% | 3.5% | 0.5% |
| 2009 | 6.0% | | 3.0% | 4.0% | 2.0% | | 2.0% | 2.0% | | 0.5% | 0.0% | 4.5% | 1.0% |
| 2010 | 7.0% | | 4.0% | 5.0% | 3.0% | | 2.0% | 2.5% | | 1.0% | 0.04% | 5.5% | 1.0% |
| 2011 | 8.0% | | 4.0% | 6.0% | 4.0% | | 2.0% | 3.5% | Renewable Portfolio goal of 20% of total electric retail | 2.0% | 0.08% | 6.5% | 1.0% |
| 2012 | 9.0% | | 4.0% | 7.0% | 5.0% | 0007 : !! | 2.0% | 4.5% | | 3.0% | 0.15% | 6.5% | 1.0% |
| 2013 | 10.0% | | 4.0% | 8.0% | 6.0% | | 2.0% | 5.5% | | 4.0% | 0.2% | 6.5% | 1.0% |
| 2014 | 11.0% | 3% in all years | 4.0% | 9.0% | 7.0% | 30% in all years | | 6.5% | sales generated | 5.0% | 0.3% | 6.5% | 1.0% |
| 2015 | 12.5% | | 4.0% | 10.0% | 8.0% | | 2.0% | 8.0% | by qualifying | 6.0% | 0.3% | 6.5% | 1.0% |
| 2016 | 14.0% | | 4.0% | 11.0% | 9.0% | 1% 1% | 2.0% | 9.5% | renewables by | 7.0% | 0.3% | 6.5% | 1.0% |
| 2017 | 15.5% | | 4.0% 4.0% | 12.0% 13.0% | 10.0% | | 2.0% | 11.0% | 2017. | 8.0% | 0.3% | 6.5% | 1.0% |
| 2018 2019 | 17.0% 19.5% | | 4.0% | 14.0% | 10.0% 10.0% | | 2.0% 2.0% | 12.5% 14.0% | | 9.0% 10.0% | 0.3% 0.3% | 6.5% 6.5% | 1.0% 1.0% |
| 2019 | 20.0% | | 4.0% | 15.0% | 10.0% | | 2.0% | 14.0% | | 11.0% | 0.3% | 6.5% | 1.0% |
| 2020 | 20.076 | | 4.070 | 13.0 /6 | 10.078 | | 2.076 | 14.070 | | 11.076 | 0.576 | 0.578 | 1.0 /6 |
| Qualifying Technology | Solar thermal, photovoltaic, ocean thermal, wave, tidal, hydro (<5 MW), wind, biomass, landfill gas, fuel cells | Solar thermal, photovoltaic, ocean thermal, wave, tidal, hydro (<5 MW), wind, biomass, MSW | Cogeneration, CHP (>50% efficiency), energy efficiency | Solar thermal, photovoltaic, ocean thermal, wave, tidal, marine, hydro (I - 25 MW, II = 5 MW), wind, biomass, landfill gas, anaerobic digester, fuel cells, geothermal, MSW (II only), cogeneration & CHP (<2 MW). Class I sources began operation after December 31, 1997. Class II sources began operation prior to that date. | Solar thermal, photovoltaic, tidal, hydro, wind, biomass, landfill gas, fuel cells (w/ renewable fuels), geothermal. | Hydro, biomass, MSW (with recycling), cogneration, CHP | Solar thermal, ph thermal, wave, t MW), wind, biom anaerobic diges renewable fuel | tidal, hydro (<30 nass, landfill gas, ter, fuel cells (w/ | Solar water heat, solar thermal electric, photovoltaics, landfill gas, wind, biomass, hydro, anaerobic digesters, fuel cells using renewable fuels (in service after December 31, 2004) | Solar thermal, photovoltaic, ocean thermal, wave, tidal, hydro, wind, biomass, landfill gas, anaerobic digester, geothermal | Solar thermal, photovoltaic | Biomass (<25 MW), landfill gas, anaerobic digester | Hydro (<5 MW) |
| Use Generator Information System RECs? | | | Yes | Y | es | Ye | es | Yes | | Y | es | | |
| Purchase of RECs from outside ISO- NE allowed? | delivery of energy from the renewable energy | | Yes, from adjacent areas, with confirmation of delivery of energy | Yes, from ac | ljacent areas | Yes, from ad | ljacent areas | Yes | Yes, from adjace | ent areas with con the renewable | firmation of delive energy source | ry of energy from | |

⁽a) Massachusetts Green Communities Act directs that new RPS standards for Class I and Class II be in place by January 1, 2009.

Sources:

- (1) ISO New England. "Second Draft: 2008 Regional System Plan." July 31, 2008.
- (2) Massachusetts State Legislature. Chapter 169 of the Acts of 2008: An Act Relative to Green Communities. Available at: http://www.mass.gov/legis/laws/seslaw08/sl080169.htm
- (3) Database of State Incentives for Renewable Energy (DSIRE). Vermont Incentives for Renewable Energy. Available at: http://www.dsireusa.org/library/includes/incentive2.cfm?lncentive_Code=VT04R&state=VT&CurrentPageID=1

Addressing CO₂ Issues

- Carbon regulation is here (likely coming at the Federal Level).
- Cap and Trade is proposed mechanism
- Allowances will be auctioned
- NASUCA Global Warming Resolution
 - Urges Congress to focus on allowance allocations
 - Ensure that consumers are not disadvantaged